Montana Department of Environmental Quality
Permitting and Compliance Division
Waste and Underground Tank Management Bureau
1520 East 6th Avenue
P.O. Box 200901
Helena, Montana 59620-0901

Draft Environmental Assessment
CHS Laurel Refinery
Statement of Basis

Montana Hazardous Waste Permit Number: MHWP-14-02

Issued to: CHS Laurel Refinery
803 Highway 212 S.
Laurel, Montana 59044-0909

Legal Description: Section 15 and 16, Township 2 South, Range 24 East, Yellowstone County, Montana

Issued by: Hazardous Waste Program
Waste and Underground Tank Management Bureau
Permitting and Compliance Division
Montana Department of Environmental Quality

Purpose of the Environmental Assessment
The Montana Department of Environmental Quality (DEQ) is required under the Montana Environmental Policy Act (MEPA) to conduct an environmental assessment (EA) on the proposed permit action described in this document. An EA details all reasonable alternatives to DEQ's action; and outlines the potential impacts to the human environment resulting from DEQ's permitting action and reasonable alternatives to that action.

Based on the impact analysis and professional judgment, DEQ makes a decision on the proposed permit action and summarizes the decision in the EA. If the decision significantly impacts the human environment, a more detailed environmental review, called an environmental impact statement, must be conducted by DEQ.

Public Comment Period
The public comment period allows interested citizens, members of the regulated community, and other governmental agencies an opportunity to comment on this environmental assessment. **The comment period is July 14 to August 27, 2014.**

Copies of the environmental assessment and associated documents (draft permit, Statement of Basis, and Fact Sheet) are available for review at the following locations:

Location Information	Review Hours
Laurel Public Library 720 West 3rd Street PO Box 68 Laurel, MT 59044 (406)682-4961	Monday through Thursday 9 A.M. to 7:30 P.M. Saturday 9 A.M. to 3 P.M. *Closed Friday and Sunday*
Montana Department of Environmental Quality Permitting and Compliance Division Waste and Underground Tank Management Bureau Metcalf Building 1520 E. 6th Ave. Helena, Montana (406) 444-5300	Monday through Friday 8:00 am - 5:00 pm Websites: Fact Sheet, Draft Permit, Statement of Basis: http://deq.mt.gov/pubcom.mcpx Draft Environmental Assessments http://deq.mt.gov/ea/WasteMgt.mcpx

The public has until close of business on August 27, 2014 to submit written comments. Comments should include all reasonably available references, factual grounds for comments, and supporting material. Please submit written comments to the following address or email:

U.S. Mail
Becky Holmes
DEQ Permitting and Compliance Division,
Waste and Underground Tank Management Bureau
P.O. Box 200901
Helena, MT, 59620-0901

Email
DEQhazwaste@mt.gov
Subject Line – CHS Laurel Public Comment

Montana Hazardous Waste Regulations
Rules administering hazardous waste management in Montana are set forth in the Administrative Rules of Montana (ARM), Title 17, Chapter 53, sub-Chapters 1 through 12. Federal regulations for hazardous waste management are set forth in Title 40 of the Code of Federal Regulations (CFR), Parts 124 and 260 through 279, and are incorporated by reference in ARM. For ease of reading this document, when federal regulations under Title 40 of the CFR have been incorporated by reference into ARM, only the federal citation is used.

Description of Project
DEQ is proposing to select a facility-wide remedy for cleanup of contaminated soils and groundwater at the CHS Laurel Refinery. The remedy would be incorporated into the CHS Laurel Refinery hazardous waste permit (MTHWP-14-02).

The Laurel Refinery is south of the city of Laurel, Montana and has been in operation since the 1930s. Previous owners include the Independent Refining Company, Farmers Union Central Exchange Inc. (Cenex Inc.), and, currently, CHS Inc. (originally named Cenex Harvest States Cooperatives). Refinery operations are conducted on approximately 100 of 350 acres owned by CHS, all of which are zoned for heavy industrial use. The remaining acreage consists of administrative offices and green space. Adjacent property use is residential, light industrial, and agricultural. The Yellowstone River borders a portion of the southern property boundary.

The State of Montana issued a hazardous waste permit to CHS for closure and post-closure maintenance of two land treatment units in 1991. The permit was reissued in 2002 and is currently being reissued. Facilities that have been issued a hazardous waste permit are also required to cleanup releases of hazardous wastes and hazardous constituents to environmental media (i.e. soil, groundwater). As required by its hazardous waste permit, CHS must investigate and remediate contaminated environmental media found at the refinery, as well as any contamination that has migrated off-site. Results of remedial investigations conducted by CHS indicate that volatile organic compounds, polycyclic aromatic hydrocarbons, and metals are the main constituents of concern in soils and groundwater. CHS has implemented interim corrective measures to address contaminated groundwater within the refinery and at the refinery property boundary. Interim measures include oil skimming, groundwater recovery and treatment, air sparging, and chemical oxidation.

DEQ is recommending a combination of corrective measures to address contamination found in soils and groundwater. The corrective measures include remediation of contaminated soil and groundwater, institutional controls, and deferral of remedial action for areas of contamination currently inaccessible due to refinery operations. Excavation combined with ex-situ treatment or disposal, and engineered controls are proposed remedies for contaminated soils. Proposed remedies for contaminated groundwater include air sparging, oil skimming, groundwater recovery and treatment, and monitored natural attenuation. Implementation of land use controls is proposed to prevent potential exposures of contaminants to current and future on-and off-site workers, and to current and future off-site residents.

The remedy recommended by DEQ is described in a Statement of Basis. The Statement of Basis summarizes information that can be found in greater detail in reports describing the remedial investigation, human health and ecological risk assessments, and the corrective measures feasibility study. These reports are part of DEQ's public records.

Objectives of Proposed DEQ Action
DEQ is charged with administering the provisions of the Administrative Rules of Montana (ARM). The objective of the proposed action is to comply with ARM provisions pertaining to facility-wide remedial activities. DEQ must ensure facility-wide remedial activities at the Laurel Refinery are protective of human health and the environment.

Alternatives Considered

Alternative 1: No Action

The No Action alternative provides a baseline for analyzing other alternatives. Under the No Action alternative, DEQ would not select a remedy to address contamination in environmental media at the Laurel Refinery.

The Montana Hazardous Waste Act, under 75-10-406(1) Montana Code Annotated (MCA), mandates a person may not construct or operate a hazardous waste management facility without first obtaining a permit from DEQ. CHS has conducted and continues to conduct activities on two land treatment units that fall under the requirements of 75-10-406(1) MCA.

As stated in 75-10-406(7) MCA, DEQ must require corrective action for all releases of hazardous waste or constituents at a facility permitted under 75-10-406 MCA, including corrective action for releases that extend beyond the facility boundaries. In addition, 40 CFR 264.101, as incorporated by reference in ARM 17.53.1201, requires that a facility with an operating or post-closure hazardous waste permit must address releases from solid waste management units present at that facility. CHS has completed an extensive remedial investigation of the facility, including sampling, groundwater monitoring, human health and ecological risk assessments, and corrective measures feasibility study. CHS has also implemented interim corrective measures to address groundwater contamination on-site and to prevent migration of contamination off-site. Results of this work indicate cleanup of contamination is required to protect human health and ecological receptors.

The No Action alternative would not comply with requirements for facility-wide remediation cited in 75-10-406(7) MCA and 40 CFR 264.101. In addition, if not addressed, concentrations of contaminants present in environmental media could pose potential risk of exposure to human and ecological receptors. Based on the above analysis, DEQ has determined the No Action alternative is not reasonable and the alternative is not considered further in this EA.

Alternative 2: Remedy proposed by DEQ in the Statement of Basis

Under this alternative, DEQ would propose corrective measures for soil, surface water, and groundwater. The corrective measures DEQ is proposing are described in the *Final Corrective Measures Study (CMS), CHS Refinery, Laurel, Montana* (CHS, April 3, 2006) and in a Statement of Basis developed by DEQ.

In the Corrective Measures Study conducted by CHS, a list of possible remediation technologies was screened, using the numeric screening matrix in the Federal Remediation Technologies Roundtable; *Table 3-2: Treatment Technologies Screening Matrix*. Low-scoring technologies and technologies unsuitable to site geology or those presenting a high safety risk were dropped from consideration. The retained technologies were then carried forward into an evaluation of corrective measures alternatives. The corrective measures alternatives were a combination of technologies and administrative approaches or combinations of such, designed to meet cleanup objectives for the Laurel Refinery. These alternatives were ranked using technical, human health, environmental, and institutional criteria. Cost of implementation was considered as well.

A detailed evaluation of the alternatives was conducted in two stages. Each alternative was first scored against the technical evaluation criteria of reliability, implementability, and safety. The

scores of each alternative were then compared to each other. Alternatives with the highest technical scores were further evaluated against the human health, environmental, and institutional criterion. From the results of this evaluation process, corrective measures were developed for groundwater and for areas with soil contamination. CHS then recommended these corrective measures to DEQ as their preferred remedy for cleanup of contamination at the Laurel Refinery.

DEQ has concluded, based on the review of the Corrective Measures Study, as well as an extensive knowledge of the remedial activities that have been conducted and the contamination present at the facility, that the corrective measures recommended by CHS will meet the cleanup objectives for the Laurel Refinery. The proposed corrective measures are described below, categorized by environmental media.

Proposed Remedies for Soil

No Action

No further action is proposed for areas where concentrations of constituents of concern (COCs) in the soil do not pose a risk to human or ecological health. In areas where no action is proposed, sampling results indicate that concentrations of COCs are below residential risk levels for soil and below risk action levels for ecological receptors.

Institutional Controls

Institutional controls are proposed both as a sole remedy and in combination with other proposed corrective measures. Institutional controls are proposed as the sole remedy for areas where concentrations of COCs are above residential risk-based values and below industrial risk values. CHS would be required to restrict land use by establishing institutional controls which limit site zoning to long-term industrial use of the property, thus preventing use of the area for residential or recreational purposes. Institutional controls would include deed restrictions, limiting use to commercial or industrial only, and access control in the form of gates, fencing, and security during the operating life of the refinery.

Deferred

The Deferred remedy would postpone corrective measures in areas where refinery practices prevent implementation of a remedy. These areas are currently being used for waste management, are beneath refinery structures such as tanks or process units, or are otherwise inaccessible. Corrective measures would be evaluated and implemented as necessary when deferred areas become inactive, accessible, or at plant closure. When contaminated soil is accessible, CHS would be required to conduct an investigation and any necessary cleanup in accordance with requirements in the CHS hazardous waste permit. If contamination in a deferred area becomes an immediate threat to human health or the environment, the deferred status would be removed and CHS would be required to take immediate action to remove the threat.

Excavation and Removal with Institutional Controls

Excavation and removal of soil for ex-situ treatment or disposal is proposed for accessible surface soil contamination. Excavated soil would be placed on a Corrective Action Management Unit (CAMU), undergo further treatment, or be shipped off-site for disposal. Institutional controls would be combined with the excavation alternative to address any remaining contamination which is not accessible.

Engineering Controls (Capping) with Institutional Controls

Engineering controls with institutional controls is proposed for areas where infrastructure and refinery operations limit access. Engineering controls would include soil cover, capping with pavement or infrastructures such as tanks, and solidification/stabilization of soil. Engineering controls would limit human and ecological exposure to COCs and reduce infiltration and subsequent leaching of COCs to groundwater. Institutional controls are proposed in tandem with this alternative to ensure the engineering controls are maintained and inspected regularly, as well as ensuring current and future land use is limited to commercial or industrial purposes.

Because engineering controls do not reduce or remove hazardous constituents in soil, this remedy is proposed as a corrective measure until the land use changes. If land use changes in a way that causes exposure to hazardous constituents above acceptable risk levels, CHS will be required to evaluate and implement additional corrective measures.

Excavation and Removal with Institutional Controls and Engineering Controls

Excavation and removal with institutional and engineering controls is proposed for areas where infrastructure and refinery operations allow partial access for excavation of contaminated soil. Because engineering controls do not reduce or remove COCs in soil, this remedy is proposed as a corrective measure until the land use changes. If land use changes in a way that causes exposure to COCs above acceptable risk levels, CHS will be required to evaluate and implement additional corrective measures.

Proposed Remedy for Surface Water

Deferred

Surface water sampling results from the Italian Drain have shown selenium exceeds the chronic surface water standards for ecological receptors. Additional assessment is necessary to confirm the initial sample results. Corrective measures will be deferred until further evaluation is completed. DEQ will require that a schedule for the evaluation be included in the Corrective Measures Implementation Work Plan. Should the evaluation indicate remediation is required, CHS will follow procedures outlined in the hazardous waste permit for developing and implementing corrective measures.

Proposed Remedies for Groundwater

The proposed remedy for groundwater contamination is the continuation of current interim measures. DEQ is proposing technologies used for the interim measures and bases its decision on their demonstrated long-term effectiveness in reducing light non-aqueous phase liquid (LNAPL) volume and COC concentrations in the dissolved phase plume.

Air Sparging

Air sparging is proposed to remediate dissolved-phase contaminants in the groundwater at AOC-7 and the Southeast Area.

Pump and Treat

A groundwater treatment and LNAPL removal system is proposed to address dissolved-phase COCs in groundwater at AOC-1, AOC-17, and for the refinery LNAPL plume. Groundwater containing dissolved-phase COCs would be pumped from the ground and treated in the refinery wastewater treatment system. Belt skimmers would be used to remove LNAPL. In addition, a

bail-down program would continue to be implemented annually where accumulated LNAPL in wells is removed by pumping or installation of a hydrophobic sock.

Monitored Natural Attenuation

Studies by CHS indicate that natural attenuation processes are reducing contaminant levels in the dissolved-phase plumes. Monitored natural attenuation is proposed for the dissolved-phase plume at the Transportation Terminal Area. CHS would be required to monitor groundwater wells along the flow path of the plume. Monitoring parameters, such as pH, specific conductivity, dissolved oxygen and oxidation reduction potential, and concentrations of COCs would be used to evaluate degradation of organic COCs.

Groundwater Monitoring

Site-wide groundwater monitoring is proposed for evaluating and monitoring areas where COCs in soil have the potential to leach to groundwater.

Stipulations and Controls

CHS must meet all requirements of the permit, which includes conditions for corrective measures implementation, and any applicable requirements of the Montana Hazardous Waste Act and the Administrative Rules of Montana. The CHS hazardous waste permit requires submission of work plans and progress reports to DEQ for all corrective action activities. Work plans must include engineering requirements for treatment technologies and monitoring well installation, safety procedures, sampling procedures, and quality assurance for sampling and analysis. Implementation of corrective measures is documented through progress reports, which must include evaluation of progress towards meeting cleanup standards, as well as the efficacy of any remedial action at the facility. In addition, CHS must conduct an evaluation of the remedy every five years and report its findings to DEQ. All work plans and reports will be subject to DEQ's review and approval.

Non-compliance with permit conditions and/or hazardous waste regulations is subject to enforcement by DEQ.

Analysis of Regulatory Impacts on Private Property Rights

A *Private Property Assessment Act Checklist* was completed for the remedy selection and is on file at the DEQ. The DEQ determined that no taking or damaging implications requiring a further impact assessment exist.

Summary of Impacts

Potential human environmental impacts from implementation of Alternatives 1 are rated in Tables 1 and 2. The summary was completed for Alternative 2 only; Alternative 1 was not considered to be a reasonable alternative. The human environment includes those attributes, such as biological, physical, social, economic, cultural, and aesthetic factors, that interrelate to form the environment. Impacts may be adverse, beneficial, or both. The following criteria are used to rate the impacts:

- The severity, duration, geographic extent, and frequency of occurrence;
- The probability the impact will occur if the proposed action occurs;
- Growth-inducing or growth-inhibiting aspects of the impact;
- The quantity and quality of each environmental resource or value effected;

- The importance to the state and society of each environmental resource or value effected;
- Any precedent set as a result of an impact from the proposed action that would commit DEQ to future actions with significant impacts or a decision in principle about such future actions; and
- Potential conflict with local, state, or federal laws, requirements, or formal plans.

The following are definitions for major, moderate, minor, none, and unknown impacts on the human environment:

Major: A significant change from the present conditions of the human environment. Major impacts are serious enough to warrant preparing an environmental impact statement (EIS).

Moderate: Not a major or minor change from the present condition of the human environment. A single moderate impact may not warrant preparing an EIS; however, when considered with other impacts, an EIS may be required.

Minor: A slight change from the present condition of the human environment. Minor impacts are not serious enough to warrant preparing an EIS.

None: No change from the present conditions of the human environment.

Unknown: An EIS must be conducted to determine the effects on the human environment if impacts are unknown.

Table 1. Potential Impacts on Physical and Biological Environment

▪ Alternative 2 – DEQ's Proposed Remedy							
Resources		Major	Moderate	Minor	None	Unknown	Discussion Attached
A.	Air Quality			▪			✶
B.	Water Quality, Quantity, and Distribution			▪			✶
C.	Geology and Soil Quality, Stability, and Moisture			▪			✶
D.	Historical and Archaeological Sites				▪		
E.	Aesthetics				▪		
F.	Terrestrial and Aquatic Life and Habitats			▪			✶
G.	Vegetation Cover, Quantity, and Quality				▪		
H.	Unique, Endangered, Fragile, or Limited Environmental Resources				▪		
I.	Demands on Environmental Resource of Water, Air, and Energy				▪		
J.	Cumulative and Secondary Impacts				▪		

Description of Potential Impacts on Physical and Biological Environment

1. *Resource A - Air Quality:* Impacts to air quality are anticipated to be minor. Excavation of remediation wastes during remedy implementation may cause dust emissions. DEQ will require that work plans include air quality monitoring and steps to correct impacts, as necessary. Therefore, impacts to air quality are considered minor.

2. *Resource B - Water Quality, Quantity, and Distribution:* Groundwater has been impacted by historical industrial practices at the refinery. Permit conditions for remedy implementation include requirements for subsurface soil and groundwater sampling, and maintenance of groundwater remediation technologies. Should soil and/or groundwater monitoring indicate migration of constituents, CHS must implement corrective measures to remediate the contamination and prevent further migration. Impacts to water quality, quantity, and distribution would be minor.

3. *Resource C - Geology and Soil Quality, Stability, and Moisture:* Surface and subsurface soil has been impacted by historical industrial practices at the refinery. The proposed remedy requires remediation of impacted soils where accessible, land use restrictions for soils which are not accessible and best management practices to ensure worker protection from exposure to contaminated soils. Impacts to geology and soil quality, stability, and moisture would be minor. Remediation of contaminated soils is expected to have a positive impact on soil quality.

4. *Resource F: Terrestrial and Aquatic Life and Habitats:* Remediation of contaminated surface soils and surface water is expected to have a minor impact on terrestrial and aquatic life and habitats. Results of the ecological risk assessment indicate surface soil contamination may pose a potential risk to omnivorous birds on the western and eastern portions of the refinery. The proposed corrective measures for surface soils include excavation, capping, and institutional controls. Three areas with ecological risk in subsurface soil are currently being used for non-hazardous waste storage/disposal. Waste management activities in these areas will act as a cap, removing the surface soil exposure risk.

   Risk evaluation results from one surface water sample indicated a risk to aquatic life from selenium in surface water in one section of the Italian Drain. Analytical results from the surface sample showed a selenium concentration of 22μ/l, slightly above the Circular DEQ-7 acute aquatic life standard of 20 μ/l. Additional assessment is necessary to confirm the initial sample results and to determine whether selenium concentrations pose a chronic risk to aquatic life. Corrective measures will be established if further evaluation indicates selenium concentrations would pose a potential risk. The schedule for further sampling and evaluation will be included in a work plan for corrective measures implementation.

Table 2. Potential Impacts on Social, Economic, and Cultural Environment

▪ Alternative 2 – Reissuance of the CHS Hazardous Waste Permit							
Resources		Major	Moderate	Minor	None	Unknown	Discussion Attached
A.	Social Structures and Mores				▪		
B.	Cultural Uniqueness and Diversity				▪		
C.	Local and State Tax Base and Tax Revenue				▪		
D.	Agricultural or Industrial Production				▪		
E.	Human Health				▪		
F.	Access to and Quality of Recreational and Wilderness Activities				▪		
G.	Quantity and Distribution of Employment				▪		
H.	Distribution of Population				▪		
I.	Demands for Governmental Services			▪			✶
J.	Industrial and Commercial Activity			▪			✶
K.	Locally Adopted Environmental Plans and Goals			▪			✶
L.	Cumulative and Secondary Impacts			▪			✶

Description of Potential Impacts on Social, Economic, and Cultural Environment

1. *Resource I - Demands for Governmental Services:* Implementation of a remedy would require submittal of work plans, reports and completion certification documentation to the DEQ Hazardous Waste Program. These submittals would be reviewed by program staff. In addition, staff would conduct inspections during facility-wide corrective action activities. Notice to the public regarding completion of the remedy would require staff time to develop notices and review and address any public comments. Therefore, a minor impact to government services is anticipated.

2. *Resource J - Industrial and Commercial Activity:* CHS hires environmental consulting firms to implement cleanup remedies, media sampling, technical evaluations, and work plan and report development for corrective action activities at the Laurel Refinery. Samples for analytical evaluation would be sent to an external analytical laboratory for analysis. Impacts on industrial and commercial activity would be at the same level as similar impacts conducted during previous corrective action activities at the facility.

3. *Resource K - Locally Adopted Environmental Plans and Goals:* The remedy would require that CHS implement institutional measures to control or prevent present and future on-site

land use and access to contaminated soil and groundwater. CHS would be required to develop a land use control plan put institutional controls in place that will prohibit current and future use of contaminated groundwater and restrict land use of contaminated areas on the CHS facility.

Currently, the area encompassing the CHS Laurel Refinery is zoned as heavy industrial through the authority of the City of Laurel Planning Board. Required land use controls, including deed restrictions, survey plat notations, and restrictive covenants would restrict land use to industrial purposes for areas in the refinery that have been cleaned up to risk-based levels protective of industrial workers. Deed restrictions would be required to "run with the land" to ensure any restrictions are forever binding against the owner and successors in interest. Land use controls would provide additional long-term protection to that provided by the local zoning authority. Implementation of land use controls is expected to have minor impacts on local environmental plans and goals.

4. *Resource L - Cumulative and Secondary Impacts:* Remediation of soil and groundwater to industrial risk-based concentration levels would allow reuse of the CHS property. This would have a beneficial cumulative and secondary impact. Land use controls implemented as part of the remedy would provide additional long-term protection to that provided by the local zoning authority. Long-term restrictions on land use for industrial purposes would have minor cumulative and secondary impacts.

Individuals or Groups Contributing to EA
Montana Department of Environmental Quality

Draft EA Prepared
Rebecca Holmes
July 9, 2014

Recommendation

Based on the EA analysis, impacts of Alternative 2 on the Physical and Biological Environment, and Social, Economic, and Cultural Environment are minor. Based on the EA analysis, regulatory requirements, and professional judgment, DEQ recommends Alternative 2, DEQ's proposed remedy for the CHS Laurel Refinery.

The EA analysis demonstrates this state action will not be a major action significantly affecting the quality of the human environment. Therefore, the EA is an adequate level of environmental review and an EIS is not required.